Osteoarthritis: managing the pain

Medicine

1 IN 13 AUSTRALIANS SUFFER FROM **OSTEOARTHRITIS**[1]

2 IN 3 people with osteoarthritis are **FEMALE**[1]

OSTEOARTHRITIS is the **LEADING CAUSE** of **PAIN AND DISABLITY** among the elderly[2]

EXCESS WEIGHT GAIN is the MOST IMPORTANT MODIFIABLE RISK FACTOR[3]

up to **70%** OSTEOARTHRITIS IS **PREVENTABLE**[3]

OSTEOARTHRITIS[1,4,5]

Osteoarthritis is the most common form of arthritis and is the leading cause of disability worldwide.

Although osteoarthritis was previously classified as a non-inflammatory condition caused largely by excessive wear and tear, increasing evidence has shown that inflammation occurs as cytokines and metalloproteinases are released into the joint. These agents are involved in the excessive matrix degradation that characterises cartilage degeneration in osteoarthritis. Therefore, it is no longer appropriate to use the term degenerative joint disease when referring to osteoarthritis.

Osteoarthritis predominantly involves weight-bearing joints including the knees, hips, spine and feet. Other commonly affected joints include joints in the hand.

There is currently no cure for osteoarthritis. Treatment focuses on relieving pain and reducing symptoms.

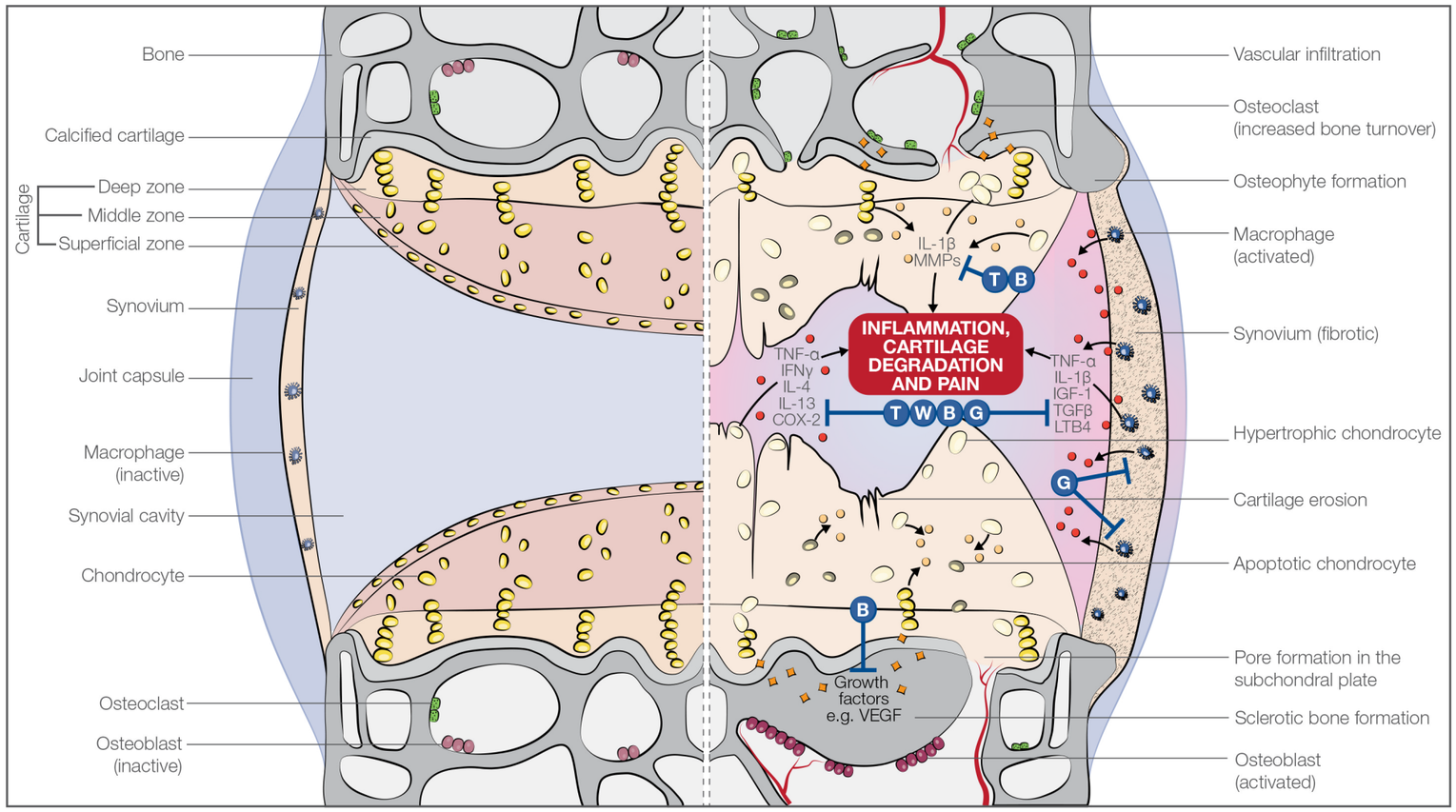
SYMPTOMS[5]

- Pain
- Tenderness
- Stiffness (joint stiffness often worse in the morning or after a period of inactivity (gelling)).
- Loss of flexibility, reduced range of motion
- Crepitations
- Osteophytes

RISK FACTORS[3,5]

- **Obesity**. Carrying extra body weight contributes to osteoarthritis by putting added stress on weight-bearing joints, such as your hips and knees. Also, fat tissue produces cytokines that may promote inflammation in and around joints.
- **Joint injury**. Physical trauma/injury to joints can cause cartilage damage. Also, repetitive physical activities that place stress on a particular joint or joints can damage cartilage over time.
- **Older age**. Increased incidence with age.
- **Gender**. The disease is more common in women.
- **Genetics**. Certain people have an inherited predisposition to develop osteoarthritis.
- **Bone deformities**. Some people are born with malformed joints or defective cartilage, which can increase the risk of osteoarthritis.
- **Other diseases**. Having diabetes or rheumatic diseases such as gout and rheumatoid arthritis can increase your risk of developing osteoarthritis.

OSTEOARTHRITIS: PATHOPHYSIOLOGY AND NATURAL INTERVENTIONS[2-10]



COX-2: cyclooxygenase-2
IGF-1: insulin-like growth factor-1
IL: interleukin
IFNγ: interferon-gamma
MMPs: matrix metalloproteinases
TGFβ: transforming growth factor-beta
TNFα: tumour necrosis factor-alpha
VEGF: vascular endothelial growth factor
PGI-2: prostacyclin-2 (platelet aggregation, free radical production)
PGE2: prostaglandin E2 (vasodilation, chemotaxis, erythema, oedema)
LTB4: leukotriene B4 (vascular permeability, pain)

- chondrocyte
- hypertrophic chondrocyte
- apoptotic chondrocyte
- osteoclast
- inactive osteoblast
- activated osteoblast
- inactive macrophage
- activated macrophage
- growth factor
- promote inflammation
- stimulate cartilage degradation

TURMERIC
Curcuma longa

ANTI-INFLAMMATORY, ANTIOXIDANT

↓ MMPs
↓ TNF-α
↓ COX-2 → ↓ PGE2, PGI2
↓ IL-1β
Protects gastric mucosa

T

WHITE WILLOW
Salix alba

ANTI-INFLAMMATORY, ANALGESIC, ANTIOXIDANT

↓ COX-2
↓ inflammatory exudate
↓ leukocyte infiltration
↓ TNF-α

W

BOSWELLIA
Boswellia serrata

ANTI-INFLAMMATORY

↓ IL-1β
↓ MMPs
↓ VEGF
↓ LTB4
↓ TNF-α
↓ IFNγ

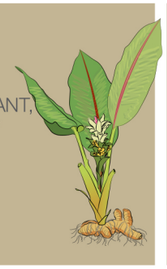
B

GINGER
Zingiber officinale

ANTI-INFLAMMATORY, ANALGESIC, ANTIOXIDANT, IMMUNOMODULATORY

↓ macrophage produced inflammatory cytokines
↓ TNF-α

G



JAMAICAN DOGWOOD
Piscidia piscipula

ANODYNIC